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Remarks

This a full and timely response to the outstanding Office Action mailed on 01/25/2005. In response, please enter the amendments and consider the following remarks. The Office Action of 01/25/2005 rejected claims 1, 11 and 17 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Further, claims 1-5, 11, 17-19, 21, and 27-29 were rejected as being unpatentable under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,644,625 of E.L. Solot (hereafter referred to as Solot). Also, claims 6-10, 12-16, 22-26, and 31 were rejected under 35 U.S.C. §103 as unpatentable over Solot in view of U.S. Patent No. 6,088,428 of D. Trandal, et. al (hereafter referred to as Trandal). Finally, claims 1, 17, and 27 were objected to for informalities. No claims are being amended or cancelled in this response.

General Comments on the Disclosure of Present Application

The application discloses three embodiments for a call classifier. The first embodiment is illustrated in FIG. 2C, the second embodiment is illustrated in FIGS. 2A and 8-11, and the third embodiment is illustrated in FIGS. 2B, 12, and 13. The Office Action asserts (as have the previous Office Actions) that one of a plurality of tones is determined in all three embodiments by the tone determination method set forth for the tone detector of FIG. 2C on page 17, line 12 through page 18, line 18. However, the application is clear that the tone detector or its method is only used in the first embodiment. At present, there are no claims directed to the first embodiment.

With respect to the second embodiment of FIG. 2A and FIGS. 8-11, the text on page 24, lines 1-12, is clear that one of the plurality of tones is determined by using HMM analysis. For example, "Block 806 is

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responsive to this full feature vector from block 803 and a tone control signal from decision block 804 to add special feature bits to the full feature vector identify it as a vector that contains a tone. The output of block 806 is transferred to block 807. Block 807 performs a Hidden Markov Model (HMM) analysis on the input feature vectors. One skilled in the art would readily realize that other alternatives to HMM could be used such as Neural Net analysis. Block 807 as can be seen in FIG. 11 actually performs one of two HMM analysis depending on whether the frames were designated as speech or tone by decision block 804", page 24, lines 1-12. FIGS. 9-11 and accompanying text add further details.

The Office Action stated that the tone detection in the second embodiment was done by the method of the first embodiment being performed by step 804 of FIG. 8 as described on page 24, lines 9-22. However, the cited text gives no description or suggestion of that method. What the application states with respect to step 804 is "Block 802 performs a fast speech detection analysis to determine whether the information is a speech or a tone. The results of block 802 are transmitted to decision block 804. In response, decision block 804 transmits a speech control signal to block 805 or a tone control signal to block 806." (See page 23, lines 18-22.) Clearly, step 804 is not performing any type of analysis to determine one of the plurality of tones but only transmitting one of two control signals that is used with the HMM analysis as described in the previous paragraph. Further, block 802 is analyzing for speech not tone information.

With respect to the third embodiment of FIGS. 2B, 12, and 13, the application clearly states "Block 1203 is receiving the input feature vectors and performing a HMM analysis utilizing a unified model for both speech and tones", page 27, lines 13-15. There is no disclosure or suggestion in FIGS. 12-13 and accompanying text on page 27, line 4

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through page 28, line 7, that the method of the first embodiment is used to perform tone determination in the third embodiment.

Objection to Claims 1, 17 and 27

The Office Action states that "It is noted that applicant's specification uses the term "detecting when referring tones and "identifying" when referring to vectors and carriers." This statement is only true with respect to the first embodiment. For the second embodiment, the application states "The output of block 806 is transferred to block 807. Block 807 performs a Hidden Markov Model (HMM) analysis on the input feature vectors. One skilled in the art would readily realize that other alternatives to HMM could be used such as Neural Net analysis. Block 807 as can be seen in FIG. 11 actually performs one of two HMM analysis depending on whether the frames were designated as speech or tone by decision block 804" page 24, lines 1-12. Clearly, the words "identifying" and "identification" are correct with respect to the second embodiment.

For the third embodiment, the application states "the results from block 1202 (which performs similar actions to those illustrated in FIG. 10) are transmitted as a full feature vector to block 1203. Block 1203 is receiving the input feature vectors and performing a HMM analysis utilizing a unified model for both speech and tones" page 27, lines 10-15. Clearly, the words "identifying" and "identification" are correct with respect to the third embodiment.

In summary, it is clear that there is no basis for this objection because of informalities.

Rejection of Claims 1, 11 and 17 under 35 U.S.C. §112, Second Paragraph

This rejection is respectfully traversed. The Office Action has rejected claims 1, 11, and 17 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the

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subject matter which applicant regards as the invention. However, the Office Action fails to state why these claims do not meet the requirements of 35 U.S.C. §112, second paragraph.

The Office Action states:

Claim 1 lines 6-8, claim 11 line 8, and claim 17 lines 9-12 recite the newly added limitation of "analyzing using automatic speech recognition analysis calculations...the received audio information for tones.. ." Applicant's specification teaches that an Automatic Speech Recognition Unit includes a tone detector to perform detection of tones (page 17 line 12-page 18 line 18) and not specifically using 'speech recognition analysis calculations' analysis to perform the detection of tones. Applicant's specification (page 12 line 10-page 13 line 18) teaches that 'Speech recognition' is used to recognize and interpreting words, phrases, etc. in speech. Speech recognition analysis calculations can not be found and therefore makes the claims indefinite as examiner interprets this as still using the method of speech recognition which was previously rejected as not enabling. Applicant's specification does not enable and disclose how using speech recognition analysis (eg. Hidden Markov Model) is able to analyze tones. Applicant's 'tone detector' within a speech recognition unit enables the analysis (page 17 line 12-page 18 line 18).

This statement does not set forth any of the errors listed in M.P.E.P §706.03(d) as reasons for rejecting claims under 35 U.S.C. §112, second paragraph. In summary, applicants submit that claims 1, 11 and 17 meet the requirements 35 U.S.C. §112, second paragraph and respectfully request that the Examiner supply details of why these claims fail to meet these requirements.

Although not germane to the claims meeting the requirements of 35 U.S.C. §112, consider now the Office Action's statement that "Applicant's specification (page 12 line 10-page 13 line 18 teaches that 'Speech recognition' is used to recognize and interpreting words, phrases, etc. in speech." A portion of the cited text clearly states "The output of filter 301 is communicated to automatic speech recognizer engine (ASRE) 302. ASRE 302 is responsive to the audio information and a template defining the type of operation which is received from templates block 306 and performs phrase and tone spotting so as to determine how the call has been terminated. ASRE 302 is implementing a grammars of concepts", page 12, lines 15-21. This statement clearly indicates that ASRE 302 is doing tone identification. Note, that Table 3 on page 14

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illustrates a grammar that includes tone identification information. Table 3 is a continuation of the text cited above by the Office Action. The other portions of this Office Action's statement are address in other sections of this response.

Rejection of Claims 1-5 under 35 U.S.C. §102(b)

Claim 1 recites:

receiving audio information from the destination endpoint;
analyzing using automatic speech recognition analysis calculations the received audio information for a first type of classification;
analyzing using the automatic speech recognition analysis calculations the received audio information for a second type of classification wherein the second type of classification is for identification of tones in the audio information; and
determining a call classification for the destination endpoint in response to the analysis of the first type of classification and the analysis of the second type of classification.

The Office Action states:

Solot teaches a method for doing call classification on a call to a destination endpoint, comprising the steps of:
receiving audio information from the destination endpoint (col.2 lines 3-19) and analyzing using speech recognition analysis calculations the received audio information for a first type of classification (col.5 lines 31-62);
analyzing using the automatic speech recognition analysis calculations the received audio information for a second type of classification wherein the second type of classification is for identification of tones (col.5 lines 31-62) and
determining a call classification for the destination endpoint in response to the analysis of the first type of classification and the analysis of the second type of classification (col.5 lines 1-4, 31-62 and col.6 lines 20-25).

The first cited text from Solot states:

The inventive apparatus recognizes the standard intercept tone by well known techniques which isolate the intercept tone from other audio signals and to determine the presence or absence of the intercept tone. The telephone company when a telephone number is changed, disconnected or other such happening that will not allow the call to be completed will intercept the incoming call and present a recorded voice message back to the caller stating why the call cannot be completed--this is the intercept message and is preceded by a tone or group of tones. When the tone or tones is received the present system will record the voice intercept message.

The present system analyzes the voice message via the voice recognition board (FIG. 1, item 13). The software and the hardware that analyzes the voice is capable of providing a confidence level associated with the decoding of the voice message. A threshold 109 is provided such that when the confidence level meets or exceed the threshold the message contents are

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processed for a change in telephone number 111. The confidence level is built into the software supplied with the Voice Recognition board. This software determines what the utterance is and supplies a number from zero to 99 to indicate confidence in the utterance being properly determined. The system software will decide what level is suitable for acceptance depending on the errors encountered in a real world environment. If a new telephone number is provided the call may be placed to the new number 115 or a prompt to the caller informing 117 the caller of the new number. If the caller does not want to call the new number the system reverts back to the start 100. Otherwise, if the caller wishes, the new number is dialed and the state reverts to state 102.

The cited text clearly does not state that the tones are identified using automatic speech recognition; rather, the cited text states "The inventive apparatus recognizes the standard intercept tone by well known techniques which isolate the intercept tone from other audio signals and to determine the presence or absence of the intercept tone." These well known techniques are mostly likely performed by board 11 which performs tone detection along with other operations. There is no indication that these well known techniques include using automatic speech recognition which would not be known except from applicants' patent application. Further, there is no disclosure or suggestion that Voice Recognition Board 13 is involved in recognizing the intercept tone. In summary, there is no disclosure or suggestion in Solot that the intercept tone is detected using automatic speech recognition.

Further, Solot does not disclose or suggestion the step of "determining a call classification for the destination endpoint in response to the analysis of the first type of classification and the analysis of the second type of classification." In Solot, the call classification for the destination endpoint is determined by the detection of the intercept tone. The intercept tone classifies the destination endpoint as one to which a telephone call can not be made. Once this classification is made, the intercept voice message is analyzed using automatic speech recognition to determine a telephone number that will define a new destination endpoint. (See blocks 105-115 of FIG. 2A and accompanying text in Solot.) This operation is clearly not what the step of determining of claim 1 is reciting.

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In summary, Solot does not anticipate claim 1 under 35 U.S.C. §102(b). Claims 2-5 are directly or indirectly dependent from claim 1 and are patentable for at least the same reasons as claim 1.

Rejection of Claim 11 under 35 U.S.C. §102(b)

Claim 11 is patentable under 35 U.S.C. §102(b) for the same reasons as claim 1.

Rejection of Claims 17-21 under 35 U.S.C. §102(b)

Claim 17 and claims 18, 19 and 21, as presently in the application, are patentable under 35 U.S.C. §102(b) for the same reasons as claim 1 and claims 2-5.

Rejection of Claims 27-29 under 35 U.S.C. §102(b)

Claim 27 is patentable under 35 U.S.C. §102(b) for reasons similar to those set forth for claim 1. Claims 28 and 29 are directly or indirectly dependent on claim 27 and are patentable for at least the same reasons. Claim 30 had been previously withdrawn.

Rejection of Claims 6-10 under 35 U.S.C. §103(a)

Claims 6-10 are directly or indirectly dependent on claim 1 and are patentable for at least the same reasons as claim 1. Claim 1 is also patentable under 35 U.S.C. §103(a) over Solot in view of Trandal. The Examiner states that "Trandal discloses using a Hidden Markov Model to determine the presence of words and/or tone in audio information (col. 8 lines 16-25 and col. 23 lines 17-28)". Trandal does disclose using a Hidden Markov Model to identify words but not to identify tones. The cited text at Col. 8, lines 16-25 states:

Over a frame duration, the DSP processes the signals represented by the received frames and transmit frames, for each channel of activity, as directed by DSP software in the program store. The DSP can perform several different types of processing including speech encoding and decoding, companding, tone detection and generation, speech recognition, text-to-speech conversion, etc. All require DSP processing or computation. Thus, the frame duration determines the maximum total number of computations possible per frame of transmit and receive data.

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The cited text clearly does not state that the tone detection is being performed using any type of speech recognition but rather that tone detection is just one of a number of operations that the DSP can perform.

The cited text at col. 23, lines 17-28 states:

If no DTMF digits are detected then state 548 is entered to process a voice utterance by the subscriber. As described in detail below, the DSP generates a hidden Markov model template for the utterance and compares the input template to the subscriber's stored template which was generated in the enrollment mode described above. In one preferred embodiment the DSP is also provided with means, in a subroutine of a stored program, to provide a subscriber with access to a mailbox extension. If extension service is enabled then control is passed on branch 552 to state 720 (not shown in detail) to process access to a mailbox extension.

Clearly, the cited text has no disclosure or suggestion of using any type of speech recognition technique to identify tones. Claim 1 is patentable under 35 U.S.C. §103(a) over Solot in view of Trandal. Claims 6-10 are directly or indirectly dependent on claim 1 and are patentable for at least the same reasons as claim 1.

Rejection of Claims 12-16 under 35 U.S.C. §103(a)

Claims 12-16 are patentable under 35 U.S.C. §103(a) over Solot in view of Trandal for similar reasons as those set forth for claims 6-10.

Rejection of Claims 22-26 under 35 U.S.C. §103(a)

Claims 22-26 are patentable under 35 U.S.C. §103(a) over Solot in view of Trandal for similar reasons as those set forth for claims 6-10.

Rejection of Claim 31 under 35 U.S.C. §103(a)

Claim 27 is patentable under 35 U.S.C. §103(a) over Solot in view of Trandal for similar reasons as those set forth for claim 1. Claim 31 is directly dependent on claim 27 and is patentable for least the same reasons.

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Comments on the Examiner's "Response to Arguments"

Section of the Office Action

Applicants' attorney appreciates the Examiner's response to applicants' arguments. The Examiner stated:

Foremost, for clarification in applicant's arguments page 12, Examiner agreed in the advisory action that applicant's automatic speech recognition(A8R) unit/engine analyzes the presence of tones not the speech recognition method itself because applicant's ASR unit/engine includes a tone detector which performs the tone analysis.

Applicant states in arguments that blocks 1111-1116 of Flg.11 and accompanying text of specification (page 26, line 25-page 27 line 3) and Fig.12-13(page 27 lines 13-20) teaches that HMM analysis is used for identification of tones. Examiner respectfully disagrees as these references by the applicant comes after the result of tone detection (see step 804 of Fig.8; specification page 24 lines 9-22) and therefore HMM analysis is not used for tone detection, the result of the tone detection is inputted to the HMM analysis along with the speech. Tone detection methods by way of frequency and timing patterns is taught on page 17 line 12-page 18 line 18 of specification.

First, step 804 is only used in the second embodiment, FIG. 2A and FIGS. 8-11, and is not in the third embodiment, FIG. 2B and FIGS. 12-13. Applicants respectfully submit that the Examiner misunderstands the purpose of block 804. The application states at page 23, line 18 through page 24, line 12:

Block 802 performs a fast speech detection analysis to determine whether the information is a speech or a tone. The results of block 802 are transmitted to decision block 804. In response, decision block 804 transmits a speech control signal to block 805 or a tone control signal to block 806. Block 803 performs the front-end feature extraction operation which is illustrated in greater detail in FIG. 10. The output from block 803 is a full feature vector. Block 805 is responsive to this full feature vector from block 803 and a speech control signal from decision block 804 to transfer the unmodified full feature vector to block 807. Block 806 is responsive to this full feature vector from block 803 and a tone control signal from decision block 804 to add special feature bits to the full feature vector identify it as a vector that contains a tone. The output of block 806 is transferred to block 807. Block 807 performs a Hidden Markov Model (HMM) analysis on the input feature vectors. One skilled in the art would readily realize that other alternatives to HMM could be used such as Neural Net analysis. Block 807 as can be seen in FIG. 11 actually performs one of two HMM analysis depending on whether the frames were designated as speech or tone by decision block 804.

Clearly, step 804 is not performing any type of analysis to determine one of a plurality of tones but only transmitting one of two control signals in response to a determination by block 802. Further, block

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802 is analyzing for speech information and not tone information. In response to a control signal from block 804, it is block 807 that is determining one of the plurality of tones as further is detailed in FIG. 11. There is no disclosure or suggestion that block 804 is implementing the tone detection method used by tone detector 203 of FIG. 2C of the first embodiment.

Summary

In view of the foregoing, applicants respectfully request reconsideration of claims 1-19, 21-29, and 31, as presently in the application, and allowance of these claims.

Although the foregoing is believed to be dispositive of the issues in the application, if the Examiner believes that a telephone interview would advance the prosecution, the Examiner is invited to call applicants' attorney at the telephone number listed below.

Respectfully,

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Drawing Amendments

There are no amendments to the drawings.